actual layers, while in tubal gestation it is absent or slightly developed at the site of the sac, whether the latter has ruptured or not.

Acute Decubitus.—SEGOND (*Revue de Gynécologie et de Chir. Abdom.*, 1897, No. 1,) reports six cases of decubitus in 542 cases of vaginal hysterectomy. In every instance the operation was performed for pelvic inflammatory conditions in young subjects. An extensive erythematous blush was first noted, on the fifth day in four cases, and on the third day in two. The temperature at the same time rose and the general condition of the patient was bad. Gangrene later developed, which exposed the bone, but no death occurred. The writer regards decubitus as a trophic disturbance due to reflex irritation and the inclusion of nerves in the clamps. It might also have been due to mechanical irritation of the pelvic nerves. The severity of the operation and prolonged pressure of the parts had nothing to do with the complication.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

JOHN SLADE ELY, M.D.,

PROFESSOR OF PATHOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF THE NEW YORK INFIRMARY; INSTRUCTOR IN CLINICAL MICROSCOPY IN THE COLLEGE OF PHYSICIANS AND SURGEONS.

Bacterial Examinations of the Blood.—During life bacterial examinations of the blood are undertaken with a twofold purpose, either to assist the diagnosis by the detection of the specific germ of the disease, or to throw light upon the pathology of the disease in so far as the discovery of the specific germ in the blood may help our understanding of the general nature of the disease, and may elucidate the occurrence of complications at a distance from the site of the primary lesions.

As a diagnostic aid such examinations have proved to be very disappointing. The number of cases in which positive results have been obtained forms so small a proportion of the total number of examinations as to render them of but uncertain dependence in diagnosis. A negative result of such examination is to be accepted as in no way indicative of the non-existence of the suspected disease, and a positive result is rather to be regarded as a lucky chance occurrence than as something which might have been anticipated.

The matter is quite different, however, as regards the value of bacterial examinations of the blood as throwing light upon the general pathology of a disease. So long as it was supposed that the specific bacteria remained confined to the local or primary lesion of an infectious disease, their deleterious influence also was supposed to be similarly confined, and it was the hope of therapeutists that some means might be discovered of destroying the germs in the local lesion, and thus bringing the disease to a speedy termination.

It is clear that with the accumulation of evidence of a much wider distribution of the bacteria in the body the expectation of benefit from such local therapeutics becomes distinctly less.

But the discovery in the blood during life of the causative agent of an infectious disease goes far toward explaining the occurrence of distant and apparently spontaneous complications of that disease. As soon as it was made clear that the lesions of such complications in many instances contained the same germ as the primary lesion it was presumed that the transport of the infectious material must occur through either the blood or lymph channels, and in most cases of distant transport through the former. With the discovery of the encroachment of the primary lesion upon bloodvessels and the detection of the germs themselves in the blood during life, the proof of the correctness of this view became convincing.

The number of observations of the latter sort is now very considerable. The pyogenic germs have been detected in the blood during life by Rosenbach (1884), by von Eiselsberg (1886 and 1890), by Grawitz (1894), by Petruschky (1894), and others in cases of pyæmia; by Garré (1885), by Saenger (1889), and by von Eiselsberg (1890), in cases of osteomyelitis; by Czerniewsky (1888), by Stern and Hirschler (1888), by Grawitz (1894), and by Petruschky (1894), in cases of puerperal fever; in erysipelas by Grawitz (1894), and by Petruschky (1894); and in cases of malignant endocarditis by Saenger (1889), by Grawitz (1894), and by Petruschky (1894).

The pneumococcus has been found in the blood during life in cases of pneumonia by Belfanti (1890), by Bouley (1891), and by Sittmann (1894), and in a case of malignant endocarditis by Grawitz.

In 1894 Sittmann and Barlow detected the bacillus coli communis in the blood of a case of cystitis in which a general pyæmic condition had developed as a complication; and in 1895 the gonococcus was obtained by Thayer and Blumer by culture from the blood of a patient suffering from malignant endocarditis which occurred as a sequel to gonorrhœal infection.

The tubercle bacillus was detected morphologically in the blood during life in cases of tuberculosis as far back as 1884 by Weichselbaum, Meisels, Lustig, and others, but has not, I believe, been cultivated from the blood as yet. The differential method of staining the tubercle bacillus is, however, so characteristic as to make these observations reliable.

In 1893 the typhoid bacillus was obtained from the blood of a patient suffering from the typhoid fever by Thiemisch, and this observation has since that time been repeated by Ettlinger, by Stern (1896) and by Kühmann (1896).

Though from this enumeration it must be evident that already a very considerable number of observations of the presence of specific bacteria in the blood during life are at command, the recently reported observations of Kohn and Block are of much interest as throwing additional light upon this subject.

The investigation by Kohn was carried on in the Urban Hospital in Berlin (*Deutsche medicinische Wochenschrift*, 1897, No. 9).

In pronounced sepsis a positive result was obtained in every case in which the blood was examined, and in some cases the bacteria were obtained in large numbers. Thus in a case of acute ulcerative endocarditis the plated blood yielded 200 colonies of streptococci and several of staphylococci.

Of three cases of subacute and chronic endocarditis one only gave a positive result. This case was complicated by thrombo-phlebitis. Six colonies of staphylococcus developed on two plates made from the blood.

Negative results were obtained in cases of erysipelas, phlegmon, febrile jaundice, paroxysmal hæmoglobinuria, chronic leukæmia, pseudo-leukæmia, and acute articular rheumatism.

Eight cases of typhoid fever were examined, with the result of detecting bacilli in two, but the positive identity of these germs with the typhoid bacillus was not convincingly determined.

In a case of pyæmia in which joint symptoms played a prominent part in the clinical picture, streptococci were found—six colonies on a plate which had been streaked with the blood.

But the most interesting and important part in the investigation had to do with examinations of the blood in cases of acute lobar pneumonia. Thirty-two such cases were examined, in nine of which a positive identification of the pneumococcus was possible. Seven of the positive cases terminated fatally, and the remaining two, in which recovery occurred, were complicated respectively by pneumococcus empyema and by pneumococcus abscesses.

Of the twenty-three negative cases, eighteen terminated in recovery. Of the five fatal cases of this group, the fatal determination was due in two apparently to secondary infection with the streptococcus (empyema), in one the patient was alcoholic, and in a fourth bacterial examination of the lung after death made it probable that the pneumonia had been due to the influenza bacillus, not to the pneumococcus.

In the fatal cases in which a positive result was obtained the pneumococcus was detected in some cases as long as forty-eight hours before death.

The results of these examinations are certainly very striking. With all due allowance for the fact that the mortality in Kohn's cases was somewhat high—37.5 per cent.—it is still very significant that in 28 per cent. of those cases the pneumococcus should have been detected in the blood during life. But, aside from this, the prognostic significance of the presence of the pneumococcus in the blood would appear to be very great, for of the nine fatal cases of pure pneumococcus infection in seven a positive result was obtained from the blood examination. For this reason Kohn concludes that the presence of the pneumococcus in the blood of a patient suffering from pneumonia is to be regarded as a bad prognostic indication, and that in such cases death would seem to occur as the result of pneumococcus sepsis if not as the outcome of more evident secondary lesions.

The other observation to which I would call attention was made at the Johns Hopkins Hospital by BLOCK, and is reported in the *Bulletin of the Johns Hopkins Hospital*, June, 1897. In this case the typhoid bacillus was obtained twice from the blood during life, its identity being in each instance carefully tested by cultures.

Owing to the inability of the patient, a Polish woman, to understand English, the history of the case is meagre, but it appears that she entered the hospital in a weak condition, with considerable dyspnœa, restlessness, apathy, and fever; that she soon became delirious and continued so until her death six days after her admission, and that during this time her temperature ranged irregularly between the normal point and 104.6° Physical examination disclosed no lesion of the lung.

Two days after her admission 1½ c.c. of blood was withdrawn from a vein of the forearm under aseptic conditions and was cultivated, resulting in the development of thirteen colonies of actively motile bacilli identical in every way with the typhoid bacillus, as was shown by numerous tests on various differential media. Three days later a second culture was taken by the same method, and when plated developed one colony of the same germ.

The autopsy disclosed the usual lesions of typhoid fever, in addition to which there was evidence of the invasion of the body by a gas-forming bacillus. Cultures upon agar plates yielded the typhoid bacillus in the spleen, liver, kidney, and in a portion of retained placenta; bacillus coli communis in the kidney and heart's blood; bacillus pyocyanus in the heart's blood; and bacillus proteus in the bile. It is quite likely that the invasion of the bacillus coli and of the bacillus proteus occurred post mortem, the autopsy not having been undertaken until thirty-seven hours after death. The gas-forming bacillus failed to grow in both aërobic and anaërobic cultures.

This is, I believe, the only case on record in which the typhoid bacillus has been detected twice in the same patient and in such numbers as in the first test, both of which circumstances testify to the very large number of the germs which must have been present in the blood at different times in the course of the disease, and in the first instance as long as four days before the fatal termination of the case.

The Etiology of Serous Pleurisy.—In an interesting article in the *Zeitschrift für klinische Medicin* (1896, xxix., 440), ASCHOFF brings together the results of his examinations of 200 cases of serous pleurisy, 41 of which are described as "idiopathic," clinically. The remaining 159 could be traced to other diseased conditions, in the course of which they occurred as complications. In 43 cases evident tuberculosis was present, and in 19 other cases it was suspected. Lobar pneumonia preceded the pleurisy in 26 cases, influenza in 11, and in 41 various other affections of the respiratory system or of the circulation. In 16 cases the pleurisy was antedated by articular rheumatism.

The exudate in all these cases was examined both microscopically and by plants on agar. In 193 cases the result of this examination was negative. Too much importance should not, however, be attached to these negative results for the reason that a very small part indeed of the exudate was examined in each case, and the implantations were upon agar alone. In similar examinations directed to the determination of the part played by the tubercle bacillus in the induction of serous pleurisy Eichhorst discovered that much depended upon the amount of exudate taken for the test. Thus in Eichhorst's investigation 65.2 per cent. of 23 cases were detected as tuberculous when 15 c.c. of the exudate were inoculated into test-animals, while less than 10 per cent. (1 of 11) of the cases showed tuberculosis when only 1 c.c. of the exudate was used.

Of the seven exudates in Aschoff's study which yielded positive results two accumulated in the course of cases of lobar pneumonia, one of them containing the pneumococcus, the other streptococcus. The same germs were also found in two cases of "idiopathic" pleurisy, and the streptococcus was cultivated from the exudate in a case of pleurisy consequent upon gangrene of the lung. One each of the positive cases occurred in connection with tuber-